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# A Systematic Literature Review on the Implementation of Contextual Teaching and Learning at Various Levels of Education and Subjects in Indonesia (2022–2026)

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**Abstract**

This study aims to describe the progress, characteristics, and key findings regarding the implementation of the Contextual Teaching and Learning (CTL) approach in the 2022-2026 period through a Systematic Literature Review (SLR). Six articles that met the inclusion criteria were analyzed based on the year of publication, educational level, academic discipline, and research methodology used. The selection process was carried out through identification, screening, and inclusion steps according to SLR guidelines. The analysis findings indicate that CTL remains a relevant learning approach and has continued to be the subject of research over the past four years. The majority of studies focused on the junior high school level with Mathematics as the dominant subject, indicating that CTL is effective in helping students connect abstract concepts with real-world contexts. From a methodological perspective, CTL studies predominantly employed Research and Development (R&D) and quantitative approaches, followed by qualitative and mixed methods. Overall findings indicate that CTL has a positive impact on improving learning outcomes, conceptual understanding, and student engagement. Future research is recommended to expand the study to other levels and subjects to gain a more holistic view of CTL's effectiveness.

**Keywords:** Contextual Teaching and Learning; Contextual Learning; Systematic Review of Literature.

## 1. Introduction

Education in Indonesia requires a learning approach that bridges academic concepts with real-world situations so students can build meaningful understanding. Empirical findings indicate that more than 70% of students still experience difficulty identifying and understanding contextual problems in learning, resulting in low literacy and problem-solving skills. This situation indicates that abstract, memorization-oriented learning is not fully able to meet students' learning needs. In the past decade, the Contextual Teaching and Learning (CTL) approach has been increasingly adopted because it is considered effective in increasing student

engagement, motivation, and conceptual understanding by linking learning materials to real-life experiences (Sulastri & Herawati, 2021).

The urgency of research on CTL has increased with the implementation of the Independent Curriculum, which emphasizes contextual and student-centered learning (Nurjanah et al., 2022). CTL has also been reported to support students' independent learning and reflective abilities, making this approach a focus of intensive study in recent years. However, this increasing number of publications has not been accompanied by a systematic and comprehensive mapping to describe the direction, trends, and quality of CTL research as a whole (Rahmawati et al., 2023). As 21st-century learning evolves, the CTL approach has also undergone innovation through technology integration. A study by Susilawati et al. (2025), for instance, examined the combination of CTL with the Technological Pedagogical Content Knowledge (TPACK) framework using a quasi-experimental design and found a significant difference between experimental and control classes ($0.004 < 0.05$) in the cognitive and affective outcomes of elementary school students, with technology support fostering more active and creative engagement with the material.

However, the main problem still faced is the limited number of studies specifically discussing the development and impact of CTL implementation in Indonesia in the recent period, particularly the 2022–2026 period. Available research is generally partial for example, focusing only on students' learning outcomes or mathematical communication skills and has not been analyzed in an organized manner using a Systematic Literature Review (SLR) methodological approach. Sadilah et al. (2022) found that implementing CTL at the elementary school level improved student motivation and learning outcomes, though the scope of the reviewed literature was limited to studies up to 2021. More recently, an SLR by Khaeriyah and Firmansyah (2025) focusing on students' mathematical communication skills found that CTL is widely applied in contemporary research, but noted that these findings remain scattered and have not been comprehensively synthesized. At the secondary level, an experimental study by Yasin et al. (2021) involving 132 junior and senior high school students in Indonesia examined CTL in English as a foreign language (EFL) learning using a two-cycle design; results showed a significant increase in speaking skills in the first cycle that continued, at a slower rate, in the second, suggesting CTL works well as a transitional approach from textbook-based to more structured, student-centered learning though its success depends heavily on teachers' readiness to design and implement it systematically. In a related area, Hafidho and Arini (2024) examined a CTL-based physics e-module and its effect on high school students' creative and critical thinking skills, reporting N-Gain values of 0.60 and 0.59 respectively and a significant difference between experimental and control classes ($p = 0.000$), pointing to CTL's contribution to cognitive competence and 21st-century skills specifically within STEM subjects.

Theoretically, CTL is grounded in constructivist and situated-learning perspectives most notably Dewey's experiential learning and Vygotsky's social constructivism which hold that meaningful learning occurs when new knowledge is actively connected to learners' authentic experiences and social context. These perspectives offer an explanation for why linking abstract subject matter to real-world situations, the core mechanism of CTL, is expected to strengthen

conceptual understanding, motivation, and higher-order thinking. However, the CTL studies synthesized in this review, like much of the broader Indonesian CTL literature, tend to report outcome measures (test scores, N-Gain values, engagement indicators) without explicitly returning to these theoretical mechanisms, leaving the explanatory pathway between CTL practices and learning outcomes under-articulated.

Several existing reviews have already addressed CTL from narrower angles. Nurzulianti et al. (2024) conducted a meta-analysis limited to CTL's effect on elementary students' critical thinking skills, Khaeriyah and Firmansyah (2025) focused specifically on students' mathematical communication skills, and Kartini et al. (2025) reviewed technology-assisted CTL models in the context of writing instruction. Each offers valuable but narrow evidence, and none maps CTL research jointly across educational levels, subjects, and methodological designs within the same period. This review is therefore intended to complement, rather than duplicate, these narrower syntheses by providing a broader though still preliminary, given the small number of eligible studies—cross-sectional mapping of CTL research in Indonesia between 2022 and 2026.

Based on this gap, this review addresses three questions: (1) how is CTL research in Indonesia distributed across publication years, educational levels, and subjects during the 2022–2026 period; (2) what research designs have been used to study CTL implementation during this period; and (3) what patterns of reported outcomes and remaining gaps emerge from this body of literature.

Based on these questions, the Systematic Literature Review approach is considered the most appropriate method because it allows for a transparent selection process and a synthesis of findings grounded in traceable evidence, even though as discussed further in the Method section the evidence base ultimately available for full-text analysis in this review is small.

This review specifically aims to map the progress of Contextual Teaching and Learning research in Indonesia during the 2022–2026 period by examining articles indexed in Scopus and ERIC. This is intended as an initial, exploratory mapping rather than a definitive account of CTL effectiveness; a recent review by Kartini et al. (2025) confirms that CTL remains relevant today, particularly when combined with learning technology, and this review is expected to complement that work by outlining trends, key findings, and research gaps that can serve as a starting reference for educators, researchers, and policymakers seeking to develop more effective and sustainable CTL learning.

## 2. Method

The data in this study were collected through two international databases, namely Scopus and ERIC, which are widely recognized as credible reference sources in educational studies and research based on systematic literature reviews (Page et al., 2021).

A search of the Scopus database was conducted using the keyword "Contextual Teaching and Learning," with restrictions on publication year (2022–2026), document type (scientific articles), and research area (Indonesia). This search strategy yielded an initial 118

relevant articles. A similar search was conducted in the ERIC database using the same keywords, with restrictions on publication year (2022–2026), document type (articles), and research location (Indonesia), yielding a total of 739 articles. All search results from both databases were then exported in RIS and NBIB formats and then imported into Mendeley software for reference management and organization. This step was carried out in accordance with recommended best practices for digital reference management in systematic literature reviews (Snyder, 2019).

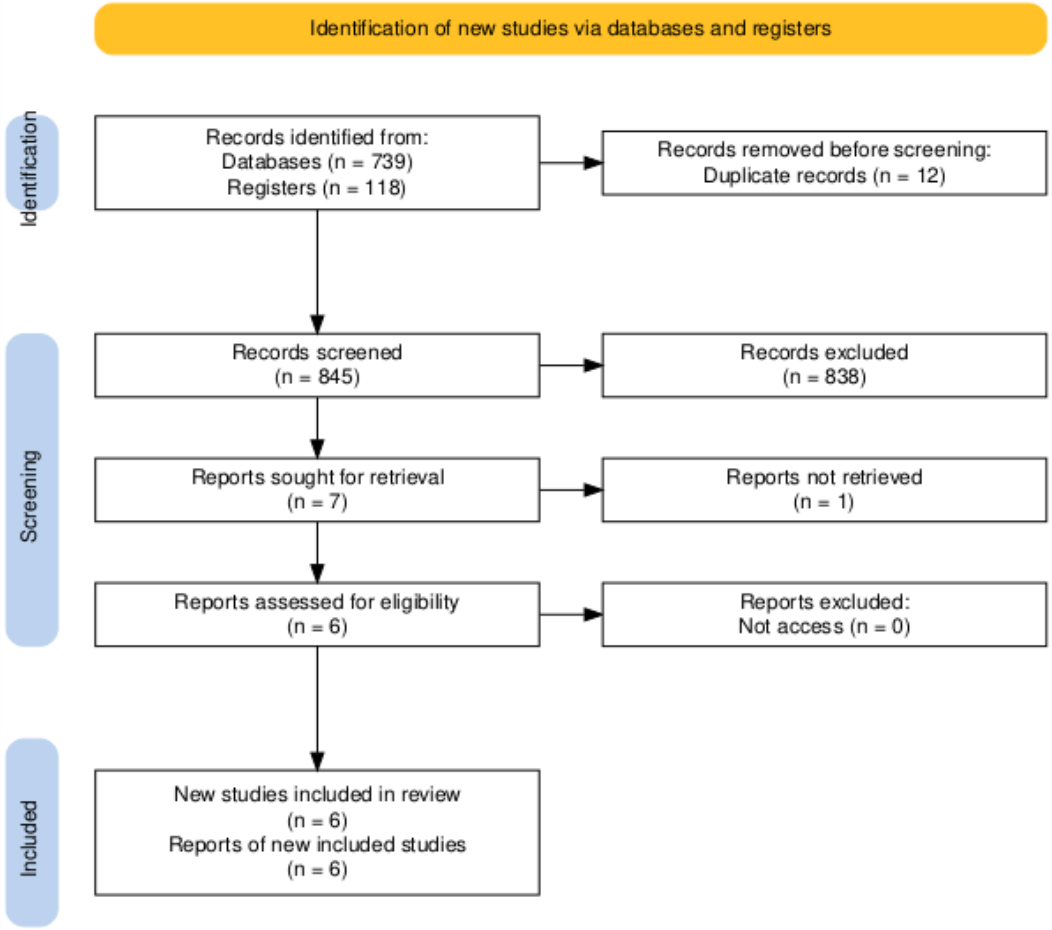



**Figure 1. PRISMA Selection Results**

After merging the search results from both databases 118 records from Scopus and 739 from ERIC, totaling 857 records 12 duplicate records were identified and removed, leaving 845 unique records for screening (Figure 1). The next stage was an initial screening process based on a review of titles and abstracts against the research focus on CTL implementation in Indonesia. At this stage, 7 articles were retained as sufficiently relevant for full-text assessment. This multistep screening process is a standard procedure in systematic literature reviews to ensure the quality and relevance of the analyzed studies (Haddaway et al., 2016).

In the eligibility stage of the PRISMA process, the 7 articles retained from initial screening were assessed through full-text review against the research criteria: a focus on the CTL approach, a research context in Indonesia, publication as a scientific article, and a publication year within 2022–2026. One article was subsequently excluded during this stage for not fully meeting these criteria, leaving six articles for the final analysis. This stage followed the 2020 PRISMA guidelines, which emphasize thorough evaluation of articles that have passed initial screening (Page et al., 2021). Unlike SLR protocols that incorporate a formal quality- or risk-of-bias appraisal (e.g., MMAT, CASP, or JBI checklists), this review relied on the PRISMA eligibility criteria alone; the absence of a structured quality appraisal is acknowledged as a limitation of this study and is revisited in the Conclusion.

## 3. Results and Discussion

Learning with the Contextual Teaching and Learning (CTL) approach has been found to be a method that can increase the relevance of subject matter to students' daily experiences, this is an important element in supporting deep understanding and active student participation (Yudha et al., 2025). To assess how effective CTL is, meta-analysis and recent research show that CTL implementation consistently has a positive impact on student learning outcomes, especially when learning is linked to students' real experiences and contexts (Yolanti & Winanto, 2023). A systematic review of six selected articles shows that CTL consistently has a positive impact on learning processes and outcomes. This aligns with findings (Hafidho & Arini, 2024) which emphasize that implementing CTL not only improves students' cognitive achievement but also significantly contributes to the development of metacognitive skills, particularly in junior high school students. In this study, CTL encourages students to plan, monitor, and evaluate their own thinking processes, making learning more reflective and meaningful. These findings reinforce the argument that CTL is not solely oriented toward outcomes but also focuses on the quality of the learning process.

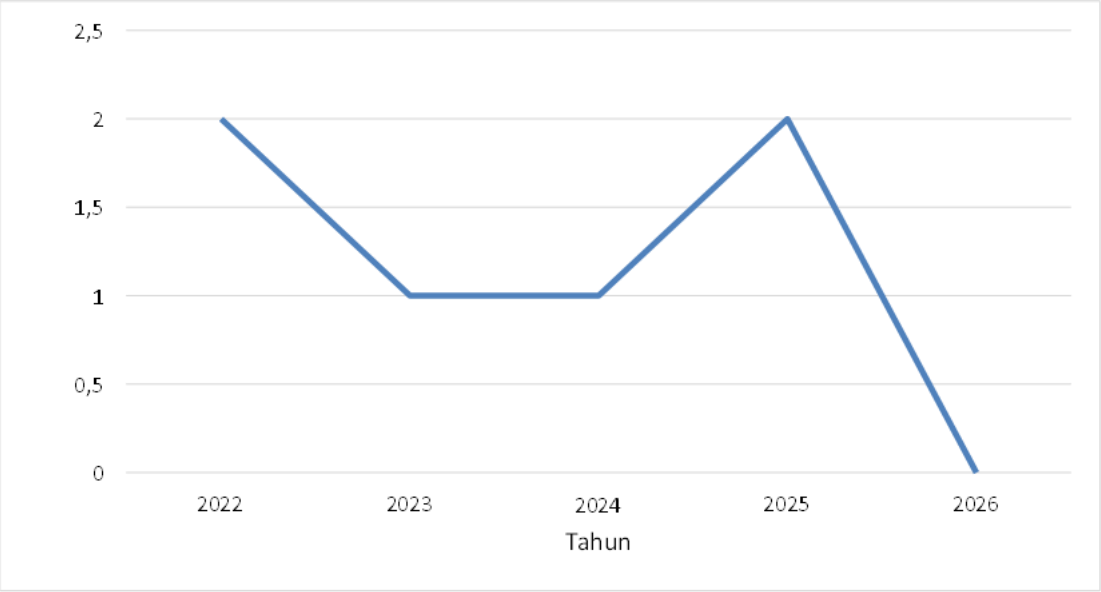
This results and discussion section aims to describe the patterns, trends, and characteristics of CTL research based on the six selected articles. The analysis focuses on the distribution of publication years, educational levels, subjects, and research methods used. This review is important given that CTL has been proven effective in helping students connect abstract concepts to real-world situations, thus facilitating understanding and enhancing knowledge transfer into everyday life (Salahuddin & Yamin, 2021).

Based on the distribution of publication years, the six included studies span the 2022–2026 period in a limited but continuing pattern: two articles in 2022, one in 2023, one in 2024, and two in 2025, with none identified for 2026 within this review's search window (Picture 2). Because this distribution rests on only six studies, it is best read as indicative of continuing scholarly interest in CTL rather than as a stable trend; a single additional or missing study could noticeably change the yearly pattern.

In terms of educational level, five of the six included studies were conducted at the junior high school level and one at the senior high school level (Table 1). This concentration suggests that CTL has more often been studied during the developmental phase in which students transition from concrete to abstract thinking, when connecting concepts to real-world

contexts is considered particularly important. However, because only one study represents the senior-high-school level, this pattern should be read as a description of where existing research happens to be concentrated, not as evidence that CTL is inherently less suitable for older students.

At the senior high school level, Nurhidayah et al. (2017) reported that implementing CTL among 11th-grade students improved physics learning outcomes compared with conventional instruction. While this single study suggests that CTL can also be applied productively with cognitively more mature students, the limited number of senior-high-school studies included in this review means that broader conclusions about CTL's effectiveness at this level cannot yet be drawn.




**Picture 2, Results for the Last 5 Years**

**Table 1. School Level**

| No. | School Level | Total |
|---|---|---|
| 1. | Senior High School | 1 |
| 2. | Junior High School | 5 |

Based on the six articles that met the inclusion criteria, the use of the CTL approach is spread across a few subjects. Of the six articles, one article examines the application of CTL in Physics, one article in Islamic Religious Education, one in Social Sciences, one article on Character Education, and two articles on Mathematics. The dominance of mathematics subjects in this study indicates that CTL is considered very suitable and is used more often in the context of mathematics learning compared to other subject areas, because CTL can connect abstract mathematical concepts with students' real-life experiences.

These findings are supported by various studies showing that implementing CTL in mathematics learning can improve student engagement and learning outcomes. Implementing CTL in mathematics allows students not only to understand theoretical concepts but also to gain hands-on experience in applying learning materials to everyday life situations.

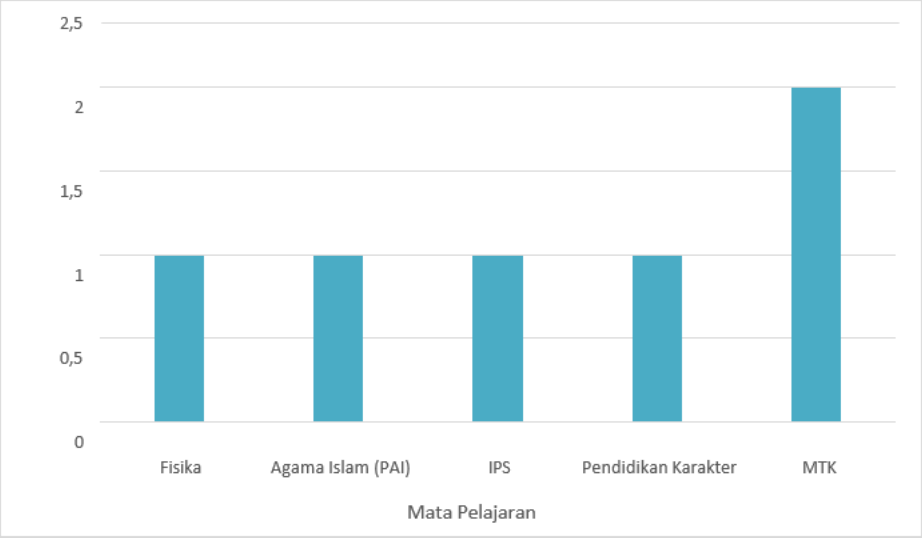



**Figure 3. Subjects**

Research by Dama (2023) found that a CTL approach improved junior-high students' learning activities, conceptual understanding, and learning outcomes in mathematics through contextual, everyday-life problems, consistent with the mathematics-related findings summarized above. In the domain of Islamic Religious Education, Asmadewi (2025) reported that a CTL-based approach contributed to students' affective and metacognitive development, helping students engage with religious values as contextual, applicable guidance rather than purely normative material. Taken together, these single-study findings illustrate CTL's potential across cognitive and affective domains, though—given that each subject area beyond mathematics is represented by only one study in this review—they should be treated as preliminary rather than conclusive.

In terms of research methods, the six studies employed a range of designs: two used Research and Development (R&D), two used quantitative approaches, one used a qualitative approach, and one used mixed method. The predominance of R&D and quantitative designs suggests that most researchers to date have focused on developing CTL-based learning tools and measuring their impact on learning outcomes, while the single qualitative and mixed-methods studies offer complementary insight into student interactions, engagement, and learning experiences that are not easily captured through quantitative measures alone (Irwan & Hasnawi, 2021). Because each method category is represented by only one or two studies, this distribution is best read as a snapshot of current practice rather than a stable methodological trend.

Figure 4 summarizes this distribution of research methods across the six included studies.

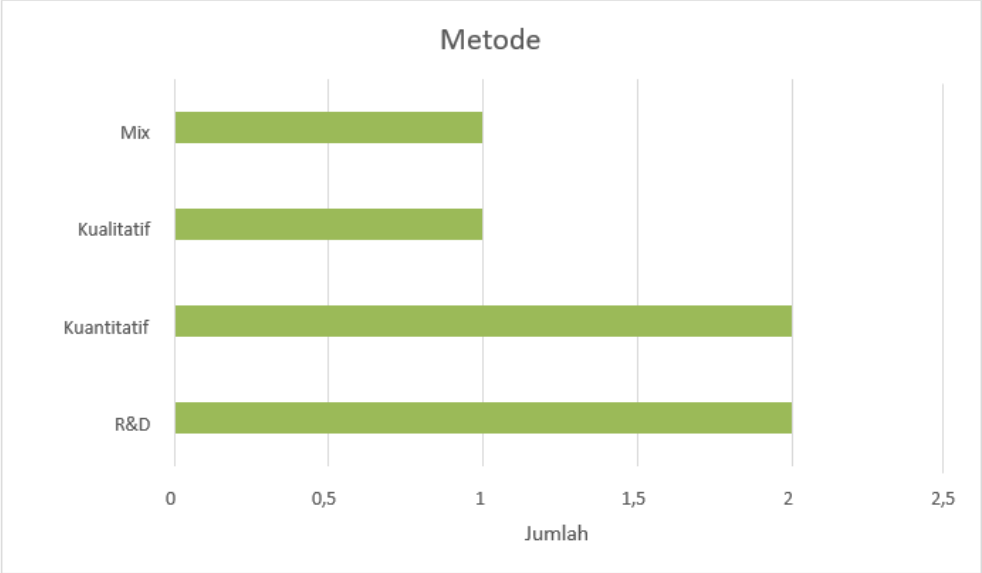



**Figure 4. Method**

## 4. Conclusion and Suggestion

Based on the analysis of six articles that met the inclusion criteria, it can be tentatively concluded that studies on Contextual Teaching and Learning (CTL) during the 2022–2026 period show an emerging, though limited, pattern of relevance for learning development. Given the small number of included studies and the considerable diversity of their educational contexts (varying levels, subjects, and methodologies), these findings should be interpreted as indicative rather than generalizable. Within this limited scope, the reviewed publications suggest that CTL continues to be applied to improve conceptual understanding, learning outcomes, and student engagement at several levels of education, with the junior high school level and mathematics subject appearing most frequently among the studies reviewed. This concentration suggests that CTL may be considered a promising approach for helping students connect abstract concepts with real-world experiences in these contexts, although further research is needed before broader claims can be made. Studies at the senior high school level and in other subjects were notably fewer, and while the limited existing findings point to improvements in students' cognitive abilities and learning activities, this evidence base remains too narrow to draw firm or wide-ranging conclusions.

In terms of research methodology, the range of methods applied R&D, quantitative, qualitative, and mixed methods shows that CTL has been studied through varied designs, though each design is represented by only one or two studies in this review. Within this limited evidence base, CTL appears to be a consistently applied approach with a positive association

with learning quality; confirming whether this association holds more broadly will require further research across a wider range of levels and subjects.

Based on the study's findings, further research is recommended to expand the implementation of Contextual Teaching and Learning (CTL) across a wider range of educational levels and subjects, given that research is still predominantly focused on junior high school and mathematics. Furthermore, research designs with tighter controls and longitudinal studies are needed to examine the impact of CTL on students' cognitive abilities and engagement. Future research could also integrate CTL with the use of learning technology to adapt to developments in modern learning environments. This will allow for a more comprehensive and in-depth understanding of CTL's effectiveness.

This review is also subject to several methodological limitations. First, the synthesis is based on only six studies drawn from an initial pool of 845 records, so the reported patterns particularly the concentration in junior high school and mathematics may partly reflect which studies happened to meet the inclusion criteria rather than the true distribution of CTL research in Indonesia. Second, no formal quality or risk-of-bias appraisal (e.g., MMAT, CASP, or JBI) was applied to the included studies, so the credibility of individual findings was not systematically weighted in the synthesis. Third, the analysis presented here is largely descriptive, reporting frequencies and publication patterns rather than a thematic or mechanism-based synthesis; future reviews with a larger evidence base could draw more explicitly on theories such as constructivism and situated learning to explain, rather than only describe, why and how CTL affects learning outcomes.

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